XVI. NEW MESONYCHIDS FROM THE UINTA.

By O. A. Peterson.

(Plates XVII-XVIII.)

During the collecting seasons of 1929-30, the field-party of the Carnegie Museum recovered in the Uinta sediments of northeastern Utah two or three specimens of *Mesonychids*, which occur in these sediments, but of which comparatively little hitherto has been known. One of these specimens was found in the Uinta Quarry of the Upper Uinta now known to be in the basal Oligocene, some twelve to fourteen hundred feet above the horizons in which the known Uinta fauna is usually found, and belongs to a distinct genus. The other specimen was found in a horizon about two hundred feet higher than that in which the type of *Harpagolestes uintensis* (Scott) was found, and pertains to a distinct species of that genus.

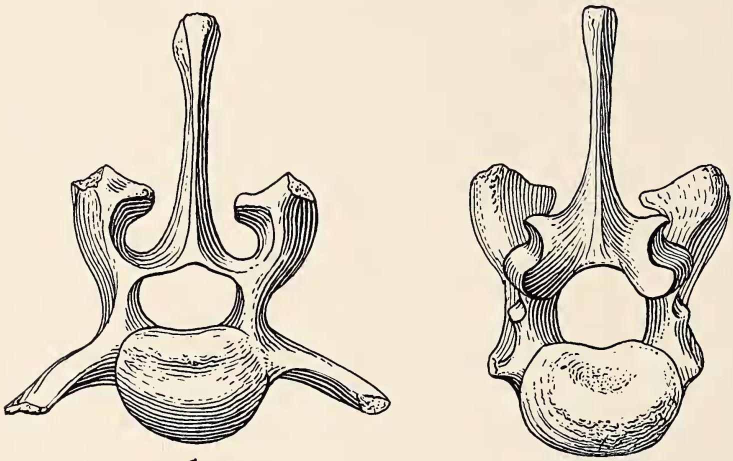
Comparisons were carefully made between the newly discovered specimens in the Carnegie Museum and the type of *Harpagolestes uintensis* at Princeton, *H. immanis* Matthew at the American Museum, and *H. macrocephalus* Wortman and *H. breviceps* Thorpe at the Yale Museum.

1. **Harpagolestes uintensis** (Scott).

In this connection it is important to restudy the specimen No. 2,961, in the Carnegie Museum, which was referred to *Harpagolestes uintensis* by Peterson in the Annals of the Carnegie Museum, Vol. XII, 1919, p. 41. The left mandibular ramus of this specimen is very nearly complete, showing premolars two, three, four, and the molar series. As Peterson already observed P_2 and M_3 have greater antero-posterior diameters than the corresponding teeth designated by Scott in his description and illustration.[1] In comparing P_3 of the lower jaw, No. 2,961 of the Carnegie Museum, with the tooth, which Scott designated as P_4 of *H. uintensis* in his work it is very evident that the tooth in the specimen in Princeton should be referred to P_3.

[1]Jour. Acad. Nat. Sci. Philad. (2), IX, 1888, p. 168; Trans. Amer. Philos. Soc. XVI, 1890, pp. 471-473, plate X, fig. 9.

In the first place P_4 and M_1 of *Harpagolestes* appear practically to have an equal antero-posterior diameter. Secondly P_3 in the specimen of the Carnegie Museum has a minute anterior basal tubercle, while that on the tooth referred to P_4 by Scott is represented by a slight wear from the upper tooth. With the exception of this slight difference, the teeth here compared are very similar. P_4 has an anterior tubercle of subequal size to that on M_1 in the specimen of the Carnegie Museum. The anterior tubercles on the cheek-teeth in the type of *H. uintensis* are on the whole smaller[2] than those in the specimen in Pittsburgh. The latter feature I judge to be purely individual. But whether or not the longer P_2 and M_3 should be likewise regarded as individual characters must rest in abeyance until future discoveries. The type of *Harpagolestes uintensis* at Princeton consists of loose teeth, which may or may not belong together. Peterson refrained from erecting a distinct species upon the specimen in the



1 2

FIG. 1. Lumbar vertebra of *H. uintensis*. 1, Posterior view; 2, anterior view. No. 2961, C. M. Coll. ½ nat. size.

Carnegie Museum in his earlier publication. For the present the specimen in question is still regarded as *H. uintensis* and is here used for purposes of comparison.

[2] In Scott's illustration here referred to, M_1 is represented without anterior basal tubercle, which is an error, since the tooth actually possesses such an element though small.

As in *Mesonyx obtusidens* described by Scott[3] the cervical centrum preserved in No. 2,961 is opisthocœlous. The neural spine, arch, and zygapophyses are stout. The centrum has a distinct ventral keel, on either side of which are noticeable excavations. The transverse process is quite heavy, judging from the broken area at its base. Altogether the cervical present indicates a muscular neck.

The two lumbar vertebræ present with the specimen are from the middle region of the lumbar series. As in *M. obtusidens* the centra are large, contracted in the middle antero-posterior region, but not depressed. The spines are similarly high, broad, thin, and inclined forward. The transverse processes are perhaps shorter and relatively of smaller size than those in *M. obtusidens*. The complex development of the zygapophyses is extraordinary for a carnivore, having the convex-concave articulations very similar to the condition found in some of the recent bovines.

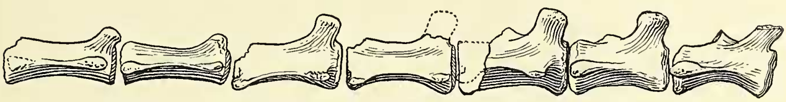


FIG. 2. Anterior caudal vertebræ of *Harpagolestes uintensis*. ⅓ nat. size; No. 2961, C. M. Coll.

Seven caudals from the proximal end of the tail are represented. The first and second have depressed centra, prominent transverse processes directed forward and outward, and robust zygapophyseal processes; those further back have the centra longer, more symmetrical, transverse processes lighter and zygapophyseal processes less robust. There were probably chevrons on some of the anterior caudals. The tail as a whole is long and robust, which is characteristic of the family.

The fragments of ribs indicate that the anterior ribs are flat and thin (rather an advanced condition for an early carnivore), while the posterior ribs are more rod-like.

The appendicular skeleton of this specimen is represented by only the second metatarsal and two phalanges of the second row. The upper portion of the shaft of the metatarsal has a trihedral section, while distally it is more nearly subcylindrical. The facet for the mesocuneiform is narrow and deep, due to backward extension on the plantar process. On the fibular face of the plantar process is a large

[3]Jour. Acad. Nat. Sci. Philadelphia Vol. IX, 1888, p. 159.

facet for articulation with the posterior facet of the ectocuneiform, while anteriorly there is a second interlocking facet for the same bone, situated back of an outward flaring portion of the head. This outward projection on the head of Mt. II apparently does not extend over on the dorsal face of Mt. III. Whether or not the hallux is present in this form cannot be determined from this specimen, since the tibial face of Mt. II is not entirely perfect. The distal articulation resembles more that of an ungulate than a carnivore. While the dorsal face is slightly rounded, it has not the hemispherical feature usually met with in the Carnivora. The carina is prominent and situated approximately in the median vertical line of the posterior face of the articulation. The phalanx of the second row is depressed, short, and broad; its proximal articulation has two depressions separated by a broad convex ridge, while distally the facet for the terminal is evenly convex from side to side and rounded from the back forward, with an abrupt, though short, continuation upward on the dorsal face.

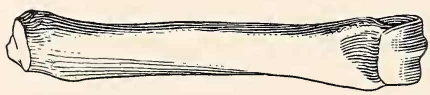


Fig. 3. Dorsal face of second metatarsal of *Harpagolestes uintensis*. No. 2961 C. M. Coll. ½ nat. size.

Measurements

Lower jaw from articulating condyle to end of symphysis	360 mm.
" " depth opposite P_2	70 mm.
" " " " M_2	80 mm.
Length of cheek-dentition P_1-M_3	173 mm.
" " premolars	100 mm.
" " molars	73 mm.
Antero-posterior diameter of P_2	21 mm.
" " " " P_3	26 mm.
" " " " P_4	30 mm.
" " " " M_1	29 mm.
" " " " M_2	27 mm.
" " " " M_3	19 mm.
Length of Mt. II	106 mm.
" " phalanx, 2nd row	18 mm.

2. **Harpagolestes leotensis** sp. nov.

Type: Lower mandibular ramus of right side. No. 11,778, C. M. Coll.

Locality: Leota Ranch on Green River, six miles north and east of Ouray, Utah.

Horizon: Uinta Eocene, Upper part of horizon C.

Specific Characters. P_1 vestigial, or absent; shortening of the jaw between canine and P_2; canine of relatively greater diameter; heels of the cheek-dentition of greater length, when compared with the type of *H. uintensis.* Jaw slenderer than that of the specimen in the Carnegie Museum No. 2,961, referred to *H. uintensis.*

P_1 of the present species, if at all present, was quite functionless and dropped out early in life. Crowded against the external face of the anterior root of P_2 is a shallow pit, which may, or may not, represent the alveolus for P_1. Immediately in front of this shallow cavity is the posterior border of the large alveolus for the canine. The latter is of enormous size, judging from the alveolus. P_4 is very nearly as long as M^1 and in this respect resembles the condition found in the mandible, No. 2,961, of the specimen in the Carnegie Museum referred to *H. uintensis.* M_3, according to the empty alveolus, was evidently not reduced as much, as one should expect, in a species found in a horizon over two hundred feet higher than that, in which *H. uintensis* is found in the Uinta Basin. The mandible, as a whole, is slenderer, somewhat longer and straighter than in *H. uintensis*, or in *H. immanis* from the Washakie Basin. In *Harpagolestes immanis* according to Matthew's illustrations[4] the diastema between the canine and P_2 is greater and the angle of the jaw no doubt of greater depth, as is the case in *H. uintensis.*

In the type of *Harpagolestes macrocephalus* Wortman from the lower part of the Bridger beds, the lower jaws are represented only by the posterior parts. Wortman speaks of a strongly inflated angle, which is possibly more exaggerated in the Bridger form than in the present species.

Harpagolestes breviceps in the Yale Museum consists of a portion of a lower jaw, upon which Thorpe[5] established his species. It has larger teeth and was no doubt a larger individual. If Thorpe's illustration is correct (p. 220, fig. 2) it appears that the symphysis of the lower jaw extends further back than in *H. uintensis* or *H. leotensis.*

[4]Memoirs of the American Museum of Natural History, No. 1, VI, pp. 496, 498.

[5]Amer. Jour. Sci. (5) Vol. V, 1923, p. 219, fig. 1-3.

According to Thorpe *H. breviceps* was found on White River, Utah, and therefore more nearly in the horizon in which *H. uintensis* is generally found.

MEASUREMENTS.

Lower jaw from articulating condyle to anterior end of symphysis	340 mm.
" " depth of ramus, opposite P_2	62 mm.
" " " " " " M_3	71 mm.
Length of cheek-dentition P_2-M_3	167 mm.
" " premolars	87 mm.
" " molars	80 mm.
Antero-posterior diameter of crown of P_2	20 mm.
" " " " " " P_4	30 mm.
" " " " " " M_1	30 mm.
" " " " " " M_2	26 mm.

3. **Hessolestes* ultimus** gen. et sp. nov.

Type: Posterior part of angle with condyle, coronoid process, and M_2 in position; No. 11,763, C. M. Coll.

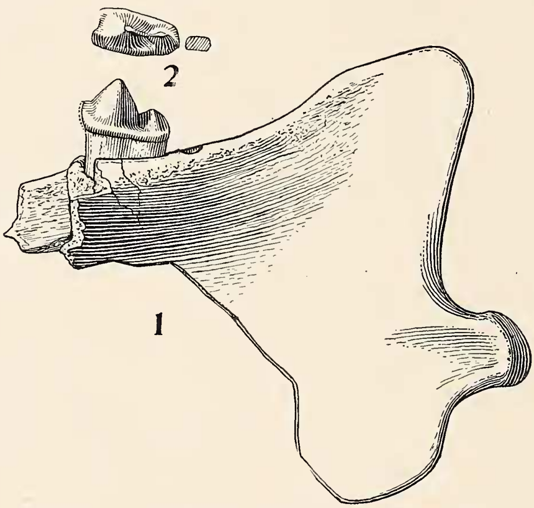


FIG. 4. 1, Back part of left mandible *Hessolestes ultimus* Peterson. 2. Crown view of M_2, *H. ultimus*. No. 11,763, ½ nat. size.

Horizon: Upper Uinta (=Basal Oligocene).

Locality: Titanothere Quarry, eleven miles west of Vernal, Uinta County, Utah.

*ἧσσων = less; λῄπτης = robber.

GENERIC CHARACTERS OBTAINED FROM THE TYPE.

M_3 rudimentary; M_2 with posterior basal heel more symmetrically rounded, a mere trace of the anterior basal cusp, the tooth relatively larger, the angle shorter and deeper than in *Harpagolestes*.

The fragment upon which this genus is based furnishes characters, which at once distinguish it from *Harpagolestes* found in the middle and upper Eocene. It seems quite evident that M_1 and M_2 have increased in size and otherwise changed, while M_3 has decreased to vestigial proportions being inserted in the jaw with probably only a single root. If one may be allowed to judge from the deeper and shorter angle, the ramus as a whole is probably shorter, thus causing a still shorter, deeper, and wider skull than in *Harpagolestes* of the lower horizons. That the genus should be placed with the Harpagolestid branch of the Mesonychidæ can hardly be doubted.

MEASUREMENTS.

From the alveolus of M_3 to summit of the coronoid process	60 mm.
Depth of angle in front of condyle	100 mm.
Antero-posterior diameter of M_2 approximately	24 mm.
Greatest transverse diameter of crown M_2	11 mm.